WHAT IS CLAIMED IS:

1. A manufacturing method for a composite coil spring comprising the following steps:

preparing a mold that includes a first connecting seat, a first cylinder connecting to the first connecting seat, a second cylinder partially movably received in the first cylinder, an mandrel movably received in the second cylinder and the first cylinder, and a second connecting seat mounted to the second cylinder opposite to the first connecting seat;

winding a coil former around the mandrel: a coil former previously spirally wound on the mandrel to define a coil groove;

winding composite material pre-preg: a composite material pre-preg being disposed in the coiled groove defined by the coil former;

compressing and heating: the mandrel with the coil former and the composite material pre-preg being inserted into the first cylinder, the coil former and the composite material pre-preg being received between the mandrel and an inner periphery of the first cylinder, the second connecting seat and the second cylinder being moved toward the first connecting seat to compress the coil former and the composite material pre-preg when the mold is heated; and

open the mold: the second connecting seat being moved apart from the first connecting seat with the second cylinder and the

mandrel to make the coil former and composite material pre-preg be detached from the first cylinder; and

a detaching the mandrel and the coil former: the mandrel longitudinally drawn out from the composite material pre-preg and the coil former due to the second connecting seat and the second cylinder, the coil former being detached from the composite material pre-preg when the composite material pre-preg is hardened and detached from the mandrel.

2. The manufacturing method as claimed in claim 1, wherein:

the first connecting seat comprises a cavity centrally defined therein and two bolts laterally extending into the cavity, the two bolts respectively diametrically corresponding to each other;

the first cylinder has two recesses defined in an outer periphery of a first end of the first cylinder and diametrically corresponding to each other, the first end of the first cylinder received in the cavity in the first connecting seat, each bolt extending into a corresponding one of the two recesses to hold the first cylinder in place;

the second connecting seat has a through hole centrally defined therein for receiving an upper end of the second cylinder and two screws laterally extend into the through hole in the second connecting seat, the two screws diametrically corresponding to each other; and

the second cylinder has two recesses defined in an outer periphery of the upper end of the second cylinder and diametrically corresponding to each other, each screw extending into a corresponding one of the two recesses in the second cylinder to hold the second cylinder in place.

3. The manufacturing method as claimed in claim 1, wherein the second cylinder comprises a passage centrally longitudinally defined therein and extending through the second cylinder, and an annular lip inwardly radially extending from an inner periphery of the passage, the mandrel including an enlarged head and shank centrally extending from the enlarged head, the enlarged head selectively engaged to the annular lip of the second cylinder to prevent the mandrel from detaching from the second cylinder.

4. The manufacturing method as claimed in claim 2, wherein the second cylinder comprises a passage centrally longitudinally defined therein and extending through the second cylinder, and an annular lip inwardly radially extending from an inner periphery of the passage, the mandrel including an enlarged head and shank centrally extending from the enlarged head, the enlarged head selectively engaged to the annular lip of the second cylinder to prevent the mandrel from detaching from the second cylinder.

5. The manufacturing method as claimed in claim 3, wherein the mandrel comprises multiple grooves longitudinally defined in an

outer periphery of the shank of the mandrel and being parallel relative to an axis of the mandrel, the multiple grooves being provided to absorb some of the transformation of the composite material pre-preg for mitigating a problem of breaking of the composite coil spring during molding.

6. The manufacturing method as claimed in claim 4, wherein the mandrel comprises multiple grooves longitudinally defined in an outer periphery of the shank of the mandrel and being parallel relative to an axis of the mandrel, the multiple grooves being provided to absorb some of the transformation of the composite material pre-preg for mitigating a problem of breaking of the composite coil spring during molding.